REFERENCE CASE WIND ENERGY

Assessment of Meteorological Site Conditions for an Offshore Wind Farm in the Baltic Sea

When EnBW Erneuerbare Energien Gmbh required an assessment of the meteorological site conditions at the site of the EnBW Baltic 2 wind farm in the Baltic Sea, a thorough analysis in compliance with international regulations was essential. That's why EuroWind, co-operation partner of TÜV Rheinland, was the right choice for this project, by virtue of its wide experience in wind resource and energy yield assessments since 2001.

Basic Facts	
Client	EnBW Erneuerbare Energien GmbH
Involved companies	▪ Bundesamt für Seeschifffahrt und Hydrographie (BSH) ▪ Hanseatic Power Cert, Zertifizierungsgesellschaft
Timeframe	April - October 2009
Project location	German exclusive economic zone (EEZ), Baltic Sea
Main services	▪ Investigation of meteorological site conditions ▪ Preparation of assessment report
Involved regulations/standards	▪ GL Wind ▪ IEC 61400 ▪ DNV-OS-J101

Initial situation and requirements

EnBW Erneuerbare Energien GmbH, a subsidiary of EnBW Energie Baden-Württemberg AG, is consequentially developing the area of offshore and onshore wind energy. Their four large offshore wind farms in the North and Baltic Sea with a total of 1,200 MW belong to the most important wind energy projects in Germany at present. They have taken EnBW Baltic 1, as the first commercial offshore wind farm in Germany, into operation in 2011. For the assessment of the meteorological conditions at the EnBW Baltic 2 wind farm site in the Baltic Sea, EEE required a professional partner for top quality assessments in the wind energy sector.

Solutions, results

EnBW Baltic 2 is the first project in the Baltic Sea combining offshore grid connection of wind power plants with cross-border transmission capacity. A study was conducted to estimate the meteorological site conditions at EnBW Baltic 2 with regard to the design basis associated with the project certification.

The analysis was performed with regard to all relevant offshore guidelines. For the site assessment, the measuring data of the research and measuring platforms Darßer Schwelle, Arkona Becken, and FINO2 were used. These were provided by the BSH. In addition, data of the 3D meso-scale HiRLAM model were applied. Along with application of the extreme value theory and bootstrapping, the necessary results were obtained and an assessment report for the design basis created.

With the data gained from the assessment of the meteorological site conditions, it is possible to optimize the wind farm for later stages in the project, by comparison with other wind energy plants and anchorage conditions.

Did you know?

The construction of 80 wind turbines with a total capacity of up to 288 MW is possible at EnBW Baltic 2 wind energy park.

Benefits for the client

EnBW Erneuerbare Energien GmbH was supported with:

- Highly qualified employees to ensure precision in the planning of the wind farm.
- Provision of top-quality site assessment according to all relevant offshore guidelines.
- First report for the design basis, within the scope of a project certification.

About EuroWind:

Founded in 2001, EuroWind started as an innovative company for wind resource and energy yield assessments. EuroWind has since gained a reputation as specialists in providing the top-quality assessments demanded by many financial institutes. Particularly for offshore wind farms, EuroWind, with an in-house developed and highly flexible three-dimensional method of computation, is acknowledged as the experts in long-range wind energy predictions. Their 3D-model was chosen for the Technology Transfer Award by the University of Cologne in 1999.

With an experienced partner like EuroWind, TÜV Rheinland is able to offer clients a full-service one-stop-shop solution for all wind energy projects.

About TÜV Rheinland

Founded 140 years ago, TÜV Rheinland is a global leader in independent inspection services, ensuring quality and safety for people, the environment, and technology in nearly all aspects of life.

We inspect technical equipment, products and services, oversee projects and help to shape processes for companies around the world. Since 2006 we have been a member of the United Nations Global Compact to promote sustainability and combat corruption.

For the wind energy sector we provide a comprehensive service portfolio, covering every aspect of wind energy projects - ranging from site selection, design and manufacturing support to the dismantling of plants.

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EuroWind